REMARKS

Receipt of the Office action dated September 9, 2003 is acknowledged. Claims 1-34 are pending in the present application. Claims 1-12 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Vorih et al., U.S. Pat. 5,829,397 (Vorih). Claims 13-16 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Yorita et al., U.S. Pat. 5,363,816 (Yorita). Claims 17-24 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Feucht et al., U.S. Pat. 6,135,073 (Feucht). Claims 25-34 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Warner, U.S. Pat. 6,439,195 (Warner). In keeping with the foregoing amendments and the following arguments, allowance of the rejected claims is respectfully requested.

Claims 1-12 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Vorih. Applicants traverse this rejection. Claim 1 recites an engine control system comprising a mechanically driven actuator adapted to open the valve ***and*** a fluidically driven actuator adapted to open the valve. In contrast, Vorih fails to disclose such elements.

Vorih discloses a single valve actuator for controlling lost motion between an engine valve and a valve actuator. Referring to FIG. 3A, Vorih discloses a mechanical valve actuator which includes a push tube 212 that follows a cam 200 to pivot a rocker arm 202, which opens engine valves 300. Vorih also includes a hydraulic system that transfers the motion of the push tube 212 to the rocker arm 202 and can vary the effective length of the push tube 212. Vorih consists of master piston 102 and a slave piston 104, referred to as a tappet 105, that vary the volume of a sealed hydraulic chamber 106. The push tube 212 is connected to the master piston 102 at one end and to a cam follower 214 at the other end. By supplying hydraulic fluid to the chamber

106, the system of Vorih effectively changes the length of the push tube 212, which controls the lost motion between the rocker arm 202 and the valves 300. However, while hydraulic fluid is employed by Vorih, Vorih does not disclose or even suggest a fluidically driven actuator adapted to open the valve.

Because Vorih does not disclose every limitation recited in claim 1, rejection of claim 1, and dependent claims 2-12, under §102(b) based on Vorih should be withdrawn. [1]

Claims 13-16 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Yorita. Applicants traverse this rejection. Claim 13 has been amended to recite a control valve operatively associated with the actuator cylinder, said control valve having a housing, said housing receiving low pressure fluid from a low pressure fluid inlet and receiving high pressure fluid from a high pressure fluid inlet. Yorita fails to disclose such elements.

Referring to FIG. 1, Yorita discloses a valve drive device that consists of an oil pump 11 that pressurizes oil and routes the oil to hydraulic pistons 10. The hydraulic pistons 10 open the valves 68 and 69 by being driven by the high pressure oil from the oil pump 11. The oil pump 11 receives low pressure oil from a hydraulic fluid tank (not shown). Motion of a plunger 14 inside the pump 11 pressurized the oil, which is routed to the hydraulic pistons 10 to open the exhaust valves 68 and 69. However, Yorita does not disclose or even suggest a control valve operatively associated with the actuator cylinder, wherein the control valve has a housing, receiving low pressure fluid from a low pressure fluid inlet and high pressure fluid from a high pressure fluid inlet.

[1] "Anticipation under 35 U.S.C. § 102(b) requires the disclosure in a single piece of prior art of each and every limitation of a claimed invention." *Rockwell International Corp. v. United States*, 47 USPQ2d 1027 (Fed. Cir. 1998).

Because Yorita does not disclose every limitation recited in claim 13, rejection of claim 13, and dependent claims 14-16, under §102(b) based on Yorita should be withdrawn.

Claims 17-24 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Feucht. Applicants traverse this rejection. Claim 17 has been amended to recite a first valve actuator adapted to open the valve, **and** a second valve actuator adapted to be in fluid communication with the first and second source of pressurized fluid, the first source taking up any lash associated with the engine, the second source causing the second valve actuator to open the valve. Feucht fails to disclose such elements.

Referring to FIG. 1, Feucht discloses a single hydraulic valve actuation system 13 that includes a tappet 25 and a plunger 26, which reciprocates in a plunger chamber 27 as an actuator element for the valve 11. The valve actuation system 13 includes a valve 20 that can supply high or low pressure oil to the plunger chamber 27 through check valves 55 and 56. The valve 20, in combination with check valves 55 and 56 provide the valve actuation system 13 with the ability to recuperate as hydraulic pressure the kinetic energy of the closing of the valve 11. However, Feucht does not disclose or even suggest first and second valve actuators, much less ones wherein the first valve actuator is adapted to open a valve, and the second valve actuator adapted to be in fluid communication with the first and second source of pressurized fluid, the first source taking up any lash associated with the engine, the second source causing the second valve actuator to open the valve.

Because Feucht does not disclose every limitation recited in claim 17, rejection of claim 17, and dependent claims 18-24, under §102(b) based on Feucht should be withdrawn.

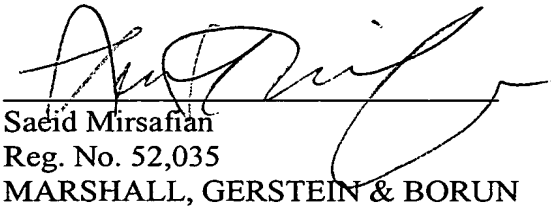
Claims 25-34 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Warner. Applicants traverse this rejection. Claim 25 recites opening the valve during one of the intake and exhaust strokes using the mechanically driven actuator, and opening the valve during the compression stroke using the fluidically driven actuator. Warner fails to disclose such elements.

Warner discloses a single valve actuator shown as a rocker arm assembly 2 in FIG. 1. The rocker assembly 2 includes a rocker arm 6 that pivots relative to a rocker shaft 4 as an outer roller 14 engages cam lobes of a cam surface 20. The rocker arm assembly includes a number of cavities and check valves (see FIG. 1 of Warner) that form a plunger circuit for a plunger 32, an accumulator circuit for an accumulator 46, and a control circuit. The plunger circuit, the accumulator circuit and the control circuit provide controlled hydraulic transfer of the motion of the outer roller to a valve 70. However, as Warner only discloses a single mechanical valve actuator, it clearly does not disclose or even suggest opening a valve during one of the intake and exhaust strokes using a mechanically driven actuator, and opening the valve during the compression stroke using a fluidically driven actuator.

Because Warner does not disclose every limitation recited in claim 25, rejection of claim 25, and dependent claims 26-34, under §102(b) based on Warner should be withdrawn.

In view of the foregoing, the above-identified application is in condition for allowance. In the event there is any remaining issue that the Examiner believes can be resolved by a telephone conference, the Examiner is respectfully invited to contact the undersigned attorney at (312) 474-6639.

Respectfully submitted,



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